

CURRICULUM VITAE

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Date of birth: 5th November, 1962

EDUCATION:

1982: B. Sc. in Physics, IIT, Kharagpur, India

1984: M. Sc. in Physics, IIT, Kharagpur, India

1989: Ph. D. in Physics, Tata Institute of Fundamental Research, Bombay, India

EMPLOYMENT:

1989-91: Post-doctoral fellow at Brookhaven National Laboratory

1991-92: Post-doctoral fellow at Centre de Energie Atomique, Saclay:

1992-95: Post-doctoral fellow at Los Alamos National Laboratory:

1995-99: Limited Term Staff Member at Los Alamos National Laboratory:

1999- : Staff Member at Los Alamos National Laboratory:

PUBLICATIONS:

A. Papers:

- [1.] Consensus and Ancestral State HIV Vaccines: Response.
(F. Gao, T. Bhattacharya, B. Gaschen, J. Taylor, J.P. Moore, V. Novitsky, K. Yusim, D. Lang, B. Foley, S. Beddows, M. Alam, B. Haynes, B.H. Hahn, and B.T. Korber)
Science **299** (2003) 1517-1518 (Mar 7, 2003; number 5612).

- [2.] Timing of the HIV-1 subtype C epidemic in Ethiopia: An improved estimate using maximum likelihood methods
(U. Smith, T. Bhattacharya, and C.L. Kuiken)
Los Alamos preprint LA-UR-02-7315, Nov. 2002.

- [3.] Continuous Quantum Measurement and the Quantum to Classical Transition.
(T. Bhattacharya, S. Habib, and K. Jacobs)
Phys. Rev. **A67**, (2003) 042103.
Los Alamos preprint LAUR-02-5289, Aug. 2002.
arXiv:quant-ph/0211036

- [4.] Recovering Classical Dynamics from Coupled Quantum Systems through Continuous Measurement.
(Shohini Ghose, Paul Alsing, Ivan Deutsch, T. Bhattacharya, S. Habib, and K. Jacobs)
Phys. Rev. **A67**, (2003) 052102.
Los Alamos preprint LAUR-01-5290, Aug. 2002.
arXiv:quant-ph/0208064
- [5.] Diversity Considerations in HIV-1 Vaccine Selection.
(B. Gaschen, J. Taylor, K. Yusim, B. Foley, F. Gao, D. Lang, V. Novitsky, B. Haynes, B. Hahn, T. Bhattacharya, and B.T. Korber)
Science **296** (2002) 2354-2360 (Jun 28, 2002; number 5577);
Available without subscription.
- [6.] Strange Happenings at the Quantum-Classical Boundary: The Delta-Kicked Rotor. or The delta-function-kicked rotor: Momentum diffusion and the quantum-classical boundary.
(T. Bhattacharya, S. Habib, K. Jacobs, and K. Shizume)
Los Alamos preprint LAUR-01-1909, May 2001. LAUR-01-6307, Nov. 2001.
Phys. Rev. **A65**, (2002) 032115.
arXiv:quant-ph/0105086
- [7.] Order a Improved Renormalization Constants.
(T. Bhattacharya, R. Gupta, W. Lee, and S. Sharpe)
Los Alamos preprint LAUR-00-3538, University of Washington preprint UW-PT/00-16, Sep. 2000.
Phys. Rev. **D63**, (2001) 074505.
arXiv:hep-lat/0009038
- [8.] Search for the Origin of HIV and AIDS : Response.
(B.T. Korber, T. Bhattacharya, J. Theiler, R. Gupta, A. Lapedes, B.H. Hahn, F. Gao, M. Muldoon, and S. Wolinsky)
Science **289** (2000) 1140-1141 (Aug 18, 2000; number 5482).
- [9.] Timing the Origin of the HIV Epidemic.
(B.T. Korber, M. Muldoon, J. Theiler, F. Gao, R. Gupta, A. Lapedes, B.H. Hahn, S. Wolinsky and T. Bhattacharya)
Science **288** (2000) 1789-1796 (June 9, 2000; number 5472).
- [10.] Continuous Quantum Measurement and the Emergence of Classical Chaos.
(T. Bhattacharya, S. Habib, and K. Jacobs)
Los Alamos preprint LA-UR-99-3187.
Phys. Rev. Lett. **85**, (2000) 4852.
arXiv:quant-ph/9906092

- [11.] Non-perturbative Renormalization Constants using Ward Identities.
(T. Bhattacharya, S. Chandrasekharan, R. Gupta, W. Lee, and S. Sharpe)
Phys. Lett. **B461**, (1999) 79-88.
Los Alamos preprint LAUR-99-1717, University of Washington preprint UW-PT/98-15, University of Tsukuba preprint UTCCP-P-56, and Duke University preprint DUKE-TH-99-185, Apr. 1999.
arXiv:hep-lat/9904011
- [12.] Heavy-light Mesons and Baryons with b Quarks.
(A. Ali Khan, T. Bhattacharya, S. Collins, C.T.H. Davies, C. Morningstar, R. Gupta, J. Shigemitsu, and J. Sloan)
Phys. Rev. **D62**, (2000) 054505.
Los Alamos preprint LAUR-99-723, OSU preprint OHSTPY-HEP-T-98-018 and University of Tsukuba preprint UTCCP-P-77, Dec. 1999.
arXiv:hep-lat/9912034
- [13.] B Meson Decay Constants from NRQCD.
(with A. Ali Khan, T. Bhattacharya, S. Collins, C.T.H. Davies, C. Morningstar, R. Gupta, J. Shigemitsu, and J. Sloan)
Phys. Lett. **B427**, (1998) 132-140.
Los Alamos Preprint LA-UR-97-4642 and OSU preprint OHSTPY-HEP-T-97-017, Jan. 1998.
arXiv:hep-lat/9801038
- [14.] Duality and the Extraction of Light Quark Masses From Finite Energy and QCD Sum Rules.
(T. Bhattacharya, R. Gupta, and K. Maltman)
Phys. Rev. **D57**, (1998) 5455-5467.
Los Alamos Preprint LA-UR-96-2698, Mar. 1997.
arXiv:hep-ph/9703455
- [15.] Matrix Elements of 4-fermion Operators with Quenched Wilson Fermions.
(R. Gupta, T. Bhattacharya, and S. Sharpe)
Phys. Rev. **D55**, (1997) 4036-4054.
Los Alamos Preprint LA-UR-96-1829 and University of Washington preprint UW/PT-96-12, Nov. 1996.
arXiv:hep-lat/9611023
- [16.] Comment on "Gravitationally Induced Neutrino-Oscillation Phases."
(T. Bhattacharya, S. Habib and E. Mottola)
Phys. Rev. **D59**, (1999) 067301.
arXiv:gr-qc/9605074

- [17.] Light Quark Masses from Lattice QCD.
(R. Gupta and T. Bhattacharya)
Phys. Rev. **D55**, (1997) 7203-7217.
Los Alamos Preprint LA-UR-96-1840, May 1996.
arXiv:hep-lat/9605039
- [18.] Large q Expansion of the 2D q -states Potts' Model.
(T. Bhattacharya, R. Lacaze and A. Morel)
J. Phys. **I7** (1997) 81.
Saclay preprint SACLAY-SPHT-96-001, Jan 1996.
arXiv:hep-lat/9601012
- [19.] Hadron Spectrum with Wilson fermions.
(T. Bhattacharya, R. Gupta, G. Kilcup, and S. Sharpe)
Phys. Rev. **D53**, (1996) 6486-6508.
Los Alamos Preprint LA-UR-95-2354, Oct 1995.
arXiv:hep-lat/9512021
- [20.] Decay Constants with Wilson Fermions at $\beta = 6:0$.
(T. Bhattacharya and R. Gupta)
Phys. Rev. **D54**, (1996) 1155-1166.
Los Alamos Preprint LA-UR-95-2355, Oct 1995.
arXiv:hep-lat/9510044
- [21.] Large Energy Cumulants in the 2-d Potts' Model and their Effects in Finite Size Analysis.
(T. Bhattacharya, R. Lacaze and A. Morel)
Nucl. Phys. **B435**, (1995) 526-554.
Saclay Preprint SACLAY-SPHT-94-008.
arXiv:hep-lat/9407004
- [22.] Semileptonic Form-Factors of Heavy-Light Mesons from Lattice QCD.
(R. Gupta, T. Bhattacharya, and D. Daniel)
Los Alamos Preprint, LA-UR-93-3580, Oct 1993.
arXiv:hep-lat/9310007
- [23.] The Free Energy of the Potts' Model: From the Continuous to the First Order Transition Region.
(T. Bhattacharya, R. Lacaze and A. Morel)
Europhys. Lett. **23** (1993) 547.
Saclay preprint SACLAY-SPHT-93-022.
arXiv:hep-th/9303075

- [24.] Critical Behavior of the Antiferromagnetic Heisenberg Model on a Stacked Triangular Lattice.
 (T. Bhattacharya, A. Billoire, R. Lacaze, and T. Jolicur)
 J. Phys. **I4** (1994) 181-186
 Saclay preprint SACLAY-SPHT-93-015.
 arXiv:cond-mat/9302019
- [25.] Z(N) Interface Tension in a Hot SU(N) Gauge Theory.
 (T. Bhattacharya, A. Gocksch, C.P. Korthals Altes, and R.D. Pisarski)
 Nucl. Phys. **B383**, (1992) 497-524.
 Brookhaven Preprint BNL-47625, Feb. 1992.
 arXiv:hep-ph/9205231
- [26.] Particles near Threshold.
 (T. Bhattacharya and S. Willenbrock)
 Phys. Rev. **D47**, (1993) 4022-4027.
 Brookhaven Preprint BNL-46481, Jul. 1991.
- [27.] Interface Tension in an SU(N) Gauge Theory at High Temperature.
 (T. Bhattacharya, A. Gocksch, C.P. Korthals Altes, and R.D. Pisarski)
 Phys. Rev. Lett. **66**, (1991) 998-1000.
 Brookhaven Preprint BNL-45297, Oct. 1990.
- [28.] Tree Unitarity in Broken Supergravity. 2. Double Gravitino Amplitude.
 (T. Bhattacharya and P. Roy)
 Nucl. Phys. **B328**, (1989) 481.
 TIFR preprint TIFR/TH/88-41, Oct. 1988.
- [29.] Tree Unitarity in Broken Supergravity. 1. Single Gravitino Amplitude.
 (T. Bhattacharya and P. Roy)
 Nucl. Phys. **B328**, (1989) 469.
 TIFR preprint TIFR/TH/88-38, Jun. 1988.
- [30.] Role of Chiral Scalar and Pseudoscalar in Two Photon Production of a Superlight Gravitino.
 (T. Bhattacharya and P. Roy)
 Phys. Rev. **D38**, (1988) 2284.
 TIFR preprint TIFR/TH/88-11, May 1988.
- [31.] Unitarity Limit on the Gaugino-Gravitino Mass Ratio.
 (T. Bhattacharya and P. Roy)
 Phys. Lett. **B206**, (1988) 655.
 TIFR preprint TIFR/TH/88-4, Mar. 1988.
- [32.] Probing a Superlight Gravitino in Photon-Photon Collisions.
 (T. Bhattacharya and P. Roy)
 Phys. Rev. Lett. **59**, (1987) 1517, ERRATUM *ibid.* **60** (1988) 1455.
 TIFR preprint TIFR/TH/87-15, Jul. 1987.

- [33.] Constraint on Unstable Photino Mass from an Ultralight Gravitino.
 (T. Bhattacharya and P. Roy)
 Pramana **28** (1987) L699.
 TIFR preprint TIFR/TH/87-1, Mar. 1987.
- [34.] The Gel'fand Realization and the Exceptional Representations of $SL(2,R)$.
 (D. Basu and T. Bhattacharya)
 J. Math. Phys. **26** (1985) 12.

B. Talks and other unrefereed publications:

This section contains those talks which were presented at conferences and formed part of the proceedings. I have excluded the talks presented by my collaborators when I played no significant role in authoring the writeup. Hence a spires search for my name is likely to find some articles not mentioned here.

- [1.] Preface.
 (T. Bhattacharya and N. Cooper)
 Los Alamos Science **27** (2002) x-xii.
- [2.] Progress report on the staggered $\epsilon' = \epsilon$ project.
 (T. Bhattacharya, G.T. Fleming, G. Kilcup, R. Gupta, W. Lee, and S. Sharpe)
 Proceedings of the 20th International Symposium on Lattice Field Theory, Boston, Massachusetts, USA, 2002, Nucl. Phys. (Proc. Suppl.) **B119**, (2003) 428-430.
 arXiv:hep-lat/0208050
- [3.] Emergence of Classical Dynamics in a Quantum World.
 (T. Bhattacharya, S. Habib, and K. Jacobs)
 Los Alamos Preprint LA-UR-02-0786
 Los Alamos Science **27** (2002) 110-125.
- [4.] Scaling behavior of improvement and renormalization constants.
 (T. Bhattacharya, R. Gupta, W. Lee, and S. Sharpe)
 Proceedings of the 19th International Symposium on Lattice Field Theory, Berlin, Germany, 2001, Eds. M. Muller-Preussker, *et al.*, Nucl. Phys. (Proc. Suppl.) **B106**, (2002) 789-791.
 Los Alamos Preprint LA-UR-01-5861
 arXiv:hep-lat/0111001

- [5.] Weak Matrix Elements for CP Violation.
Proceedings of the 19th International Symposium on Lattice Field Theory, Berlin, Germany, 2001, Eds. M. Muller-Preussker, *et al.*, Nucl. Phys. (Proc. Suppl.) **B106**, (2002) 311-313.
(T. Bhattacharya, G.T. Fleming, G. Kilcup, R. Gupta, W. Lee, and S. Sharpe)
Los Alamos Preprint LA-UR-01-5951
arXiv:hep-lat/0111004
- [6.] Renormalization Constants using Quark States in Landau Gauge.
(T. Bhattacharya, R. Gupta, and W. Lee)
Proceedings of the 19th International Symposium on Lattice Field Theory, Berlin, Germany, 2001, Eds. M. Muller-Preussker, *et al.*, Nucl. Phys. (Proc. Suppl.) **B106**, (2002) 786-788.
Los Alamos Preprint LA-UR-01-5950
arXiv:hep-lat/0111002
- [7.] Renormalization Constants using Quark States in Fixed Gauge.
(T. Bhattacharya, R. Gupta, and W. Lee)
Los Alamos Preprint LAUR-01-0355
Proceedings of the 18th International Symposium on Lattice Field Theory, Bangalore, India, 2000, Eds. T. Bhattacharya, *et al.*, Nucl. Phys. (Proc. Suppl.) **B94**, (2001) 595-598.
arXiv:hep-lat/0106007
- [8.] Improvement and Renormalization Constants in $O(a)$ Improved Lattice QCD.
(T. Bhattacharya, R. Gupta, W. Lee, and S. Sharpe)
Los Alamos Preprint LAUR-00-5683
Proceedings of the 18th International Symposium on Lattice Field Theory, Bangalore, India, 2000, Eds. T. Bhattacharya, *et al.*, Nucl. Phys. (Proc. Suppl.) **B94**, (2001) 599-602.
arXiv:hep-lat/0101007
- [9.] Using Human Immunodeficiency Virus Type 1 Sequences to Infer Historical Features of the Acquired Immune Deficiency Syndrome Epidemic and Human Immunodeficiency Virus Evolution.
(K. Yusim, M. Peeters, O.G. Pybus, T. Bhattacharya, E. Delaporte, C. Mulanga, M. Muldoon, J. Theiler, and B.T. Korber)
Proceedings of the Royal Society, London, **B356** (2001) 855-866.
- [10.] Fixed-point Pure Gauge Action using $b = \sqrt{3}$ RGT.
(T. Bhattacharya, R. Gupta and W. Lee)
Proceedings of the 17th International Symposium on Lattice Field Theory, Pisa, Italy, 1999, Eds. M. Campostrini, *et al.*, Nucl. Phys. (Proc. Suppl.) **B83**, (2000) 860-872.
Los Alamos Preprint LAUR-99-4709
arXiv:hep-lat/9910046

- [11.] Order a Improved Renormalization Constants.
 (T. Bhattacharya, R. Gupta, W. Lee, and S. Sharpe)
 Proceedings of the 17th International Symposium on Lattice Field Theory, Pisa, Italy, 1999, Eds. M. Campostrini, *et al.*, Nucl. Phys. (Proc. Suppl.) **B83**, (2000) 851-853.
 Los Alamos Preprint LA-UR-99-4973
 arXiv:hep-lat/9909115
- [12.] Non-perturbative Improvement of Bilinears in Unquenched QCD.
 (T. Bhattacharya, R. Gupta, W. Lee, and S. Sharpe)
 Proceedings of the 17th International Symposium on Lattice Field Theory, Pisa, Italy, 1999, Eds. M. Campostrini, *et al.*, Nucl. Phys. (Proc. Suppl.) **B83**, (2000) 902-904.
 University of Washington preprint UW-PT/99-21, Los Alamos Preprint LA-UR-99-4974
 arXiv:hep-lat/9909092
- [13.] Non-perturbative Renormalization Constants using Ward Identities.
 (T. Bhattacharya, S. Chandrasekharan, R. Gupta, W. Lee, and S. Sharpe)
 Proceedings of the 16th International Symposium on Lattice Field Theory, Boulder, Colorado, USA, 1998, Eds. T. DeGrand, *et al.*, Nucl. Phys. (Proc. Suppl.) **B73**, (1999) 276-278.
 Los Alamos preprint LA-UR-98-4267
 arXiv:hep-lat/9810018
- [14.] f_B and f_{B_s} using NRQCD.
 (T. Bhattacharya)
 Proceedings of the 16th International Symposium on Lattice Field Theory, Boulder, Colorado, USA, 1998, Eds. T. DeGrand, *et al.*, Nucl. Phys. (Proc. Suppl.) **B73**, (1999) 369-371.
 Los Alamos preprint LAUR-98-4266
 arXiv:hep-lat/9810015
- [15.] Advances in Determination of Quark Masses.
 (T. Bhattacharya and R. Gupta)
 Proceedings of the 15th International Symposium on Lattice Field Theory, Edinburgh, Scotland, 1997, Eds. C.T.H. Davies, *et al.*, Nucl. Phys. (Proc. Suppl.) **B63**, (1998) 95-107.
 Los Alamos preprint LAUR-97-4355, Jul 1997.
 arXiv:hep-lat/9710095

- [16.] B and B_c Mesons with NRQCD and Clover Actions.
 (A. Ali Khan and T. Bhattacharya)
 Proceedings of the 14th International Symposium on Lattice Field Theory, St. Louis, USA, 1996, Eds. C. Bernard, *et al.*, Nucl. Phys. (Proc. Suppl.) **B53**, (1997) 368-373.
 Los Alamos Preprint LA-UR-96-3338, Jun 1996.
 arXiv:hep-lat/9609048
- [17.] Light Quark Masses and the CP Violation Parameter ϵ
 (R. Gupta and T. Bhattacharya)
 Proceedings of the 14th International Symposium on Lattice Field Theory, St. Louis, USA, 1996, Eds. C. Bernard, *et al.*, Nucl. Phys. (Proc. Suppl.) **B53**, (1997) 292-294.
 Los Alamos Preprint LA-UR-96-3337, Jun 1996.
 arXiv:hep-lat/9609046
- [18.] Comparison of Inversion Algorithms for Wilson Fermions on the CM5.
 (R. Gupta, T. Bhattacharya, and G. Kilcup)
 Los Alamos Preprint LA-UR-96-1115, May 1996. (Talk presented at Workshop on Accelerating Fermion Algorithms, Julich, February 1996, by R. Gupta).
 arXiv:hep-lat/9605029
- [19.] Testing the Chiral Behaviour of the Hadron Spectrum.
 (T. Bhattacharya, R. Gupta, and S. Sharpe)
 Proceedings of the 13th International Symposium on Lattice Field Theory, Melbourne, Australia, 1995, Eds. T. Kieu, *et al.*, Nucl. Phys. (Proc. Suppl.) **B47**, (1996) 549-552.
 Los Alamos Preprint LA-UR-95-4224, Dec 1995.
 arXiv:hep-lat/9512005
- [20.] Status Report on Weak Matrix Element Calculations.
 (R. Gupta and T. Bhattacharya)
 Proceedings of the 13th International Symposium on Lattice Field Theory, Melbourne, Australia, 1995, Eds. T. Kieu, *et al.*, Nucl. Phys. (Proc. Suppl.) **B47**, (1996) 473-480.
 Los Alamos Preprint LA-UR-95-4223, Dec 1995.
 arXiv:hep-lat/9512006
- [21.] Lattice Analysis of Semi-Leptonic Form Factors.
 (T. Bhattacharya and R. Gupta)
 Proceedings of the 13th International Symposium on Lattice Field Theory, Melbourne, Australia, 1995, Eds. T. Kieu, *et al.*, Nucl. Phys. (Proc. Suppl.) **B47**, (1996) 481-484.
 Los Alamos Preprint LA-UR-95-4222, Dec 1995.
 arXiv:hep-lat/9512007

- [22.] Phenomenology from 100 Large Lattices.
(T. Bhattacharya and R. Gupta)
Proceedings of the 12th International Symposium on Lattice Field Theory, Bielefeld, Germany, 1994, Eds. F. Karsch, *et al.*, Nucl. Phys. (Proc. Suppl.) **B42**, (1995) 935-941.
Los Alamos Preprint LA-UR-95-72, Sep 1994.
arXiv:hep-lat/9501016
- [23.] Very Large Energy Cumulants of the 2d Potts-Model.
(T. Bhattacharya, R. Lacaze, and A. Morel)
Proceedings of the 12th International Symposium on Lattice Field Theory, Bielefeld, Germany, 1994, Eds. F. Karsch, *et al.*, Nucl. Phys. (Proc. Suppl.) **B42**, (1995) 743.
- [24.] Semileptonic Form Factors from Lattice QCD.
(T. Bhattacharya and R. Gupta)
Proceedings of 1994 Meeting of the American Physical Society, Division of Particles and Fields DPF94, Albuquerque, New Mexico, 1995, World Scientific, Ed. Sally Seidel. (pages 605-607)
Los Alamos Preprint LA-UR-94-3079, Aug 1994.
arXiv:hep-ph/9409284
- [25.] A Pot-Pourri of results in QCD from Large Lattice Simulations on the CM5.
(T. Bhattacharya and R. Gupta)
Proceedings of the 11th International Symposium on Lattice Field Theory, Dallas, Texas, 1993, Eds. T. Draper, *et al.*, (Nucl. Phys. (Proc. Suppl.) **B34**, (1994) 341-346).
Los Alamos Preprint, LA-UR-93-4459, Dec 1993.
arXiv:hep-lat/9312075
- [26.] The Free Energy of the Potts Model.
(T. Bhattacharya, R. Lacaze, and A. Morel)
Proceedings of the 11th International Symposium on Lattice Field Theory, Dallas, Texas, 1993, Eds. T. Draper, *et al.*, (Nucl. Phys. (Proc. Suppl.) **B34**, (1994) 671-673).
- [27.] Surface Tension in QCD.
(T. Bhattacharya, A. Gocksch, C.P. Korthals Altes and R.D. Pisarski)
Proceedings of the International Conference on Lattice Field Theory, Tallahassee, Florida, 1990, Eds. Fukugita, *et al.*, Nucl. Phys. (Proc. Suppl.) **B20**, (1991) 305-308.
Brookhaven Preprint BNL-45574, Dec 1990.